COVER SHEET

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USING SAFETY CULTURE TO OVERCOME MARKET FORCE INFLUENCE ON CONSTRUCTION SITE SAFETY

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ABSTRACT

The Australian Construction Industry's safety performance is less than optimal (Cole Royal Commission, 2003). A common perception within the industry is that the current level of safety performance reflects the heavy production demands placed on organisations and their workforce. As a consequence, real improvements in safety cannot be easily made because it is very difficult to modify contractually determined completion times required of the industry. It is argued that safety can be improved within this demanding context by improving the level of safety understanding of those people who hold safety critical positions and roles. Preliminary results of focus groups conducted revealed that: the behaviour and actions of 11 key roles were seen as the most critical to driving a safety culture; as well as general, anecdotal support for the argument that improving safety skilling and understanding within these key positions could minimise the influence of market factors. Based on these findings, a survey was undertaken to identify the tasks that people in these roles think are important to reducing injury and incidents on site. Using this data, a framework is presented that articulates the tasks those safety critical role holders must be competent to complete in order to develop and maintain a positive site safety culture.

Keywords: **Safety Culture, OH&S, Management Competency**

Using Safety Culture to Overcome Market Force Influence on Construction Site Safety

1.0 Introduction

Much has already been written regarding safety culture and how organisational values and beliefs work to influence safety on construction sites (see Guldenmund, 2000; Glendon & Stanton, 2000; Neal & Griffin, 2004; Neal, Griffin & Hart 2000; and Mohamed, 2002 for a review). From an academic perspective, safety culture is seen to be a construct that describes the values, norms, attitudes and beliefs that are held collectively towards safety within an organisation (Cox, Tomas, Cheyne, & Oliver, 1998; Glendon & Stanton, 2000; Williamson, Feyer, Cairns & Biancotti, 1997). When asking people who work at all levels within this industry to discuss safety and safety culture, most will discuss organisational practices that promote communication, collaboration, education and planning – indicating that a base level of safety culture knowledge exists at all levels throughout the industry workforce (see Biggs, Dingsdag, Sheahan and Stenson, 2005). Despite the large volume of safety culture literature and a reasonable degree of knowledge within the industry, there continues to be a high level of incidents and injuries (Cole Royal Commission, 2003; National Occupational Health and Safety Commission, 2003). In a partial explanation for the lack of impact safety culture knowledge has had on actual safety, is a complaint that the nature of the construction industry inhibits proactive safety culture behaviours. It is an argument of this paper that more needs to be achieved by those in senior positions within the industry to ensure that safety culture knowledge is applied and managed in such a way that will have maximum impact on actual site safety.

This paper, as presented in a practical and applied sense, will discuss how construction companies can minimise market force influence through safety culture competency planning. Utilising data gathered recently as part of a Cooperative Research Centre for Construction Innovation research project, this paper will first outline the research method followed by a discussion of the results pertaining to the identified safety critical roles and the key market factors that impact OH&S. The minimum safety critical tasks are then listed for each position. Finally, a discussion is made relating to how a company could approach managing these issues through better safety culture competency planning.

2.0 Research Method – Qualitative Data

Research data used in this article was gathered in two parts: focus groups / interviews and a management based *Safety Critical Tasks* survey (which will be discussed in section 3.0)

Focus Groups & Interviews

10 focus groups were held across Australia with people in a range of different positions (see Table 1 for position demographics). With the exception of one focus group, all participating companies were members of the Australian Constructors Association (ACA). The focus group discussion lasted on average one hour and fifteen minutes and was structured around a discussion of safety culture and the attitudes, skills and behaviours required by key staff members to drive a positive safety culture. The focus groups were recorded using digital voice recorders and then transcribed. The transcribed documents were then used in the qualitative data analysis programme Nvivo. The software allows for themes from the focus group discussion to be extracted and categorised.

Table 1 Position Grouping and number of Participants for Focus Groups

Position	Number of Participants
Senior Management (Inc CEO & GMs)	7
National OH&S Manager	2
State & Regional OH&S Manager	10
Site OH&S Coordinator / Advisor	10
Engineer / Construction Professional	3
Construction Manager	5
Site Manager / superintendent	4
Project Manager	4
Foremen	4
Total	49

Concurrent with the focus groups, 12 individual interviews held with staff from: ACA companies and 2nd tier contractors. The individual interviewees were asked similar questions to those posed to the focus group, but allowed for a deeper line of enquiry. Additionally, 11 interviews were held with the construction safety regulators in all States and Territories of Australia. Consultation was held with the major construction unions (ACTU, AMWU, AWU, CFMEU, CEPU), Master Builders' Association, the Tasmanian Construction and Building Industry Training Board - the results of these interviews and focus groups is discussed below.

2.1 Safety Critical Roles

The first question asked within focus groups and interviews was a request for them to list the roles that they saw as being critical to driving a positive site culture. This information was recorded and then compared between groups. There was little variation in this list between groups. The list is as follows:

- MD/CEO / General Manager
- Senior Management
- Operations/ Construction Manager
- Project Manager
- Engineer
- Site Manager / Superintendent

- Foreman
- Site OHS advisor / supervisor
- Regional Safety Manager
- State Safety Manager
- National Safety Manager

It is clear that this list represents the key roles within all the levels of a construction company. The role of the client in driving company safety culture was also mentioned in several focus groups. When participants were asked to discuss the difference between a good and poor site safety culture, they often discussed the behaviour and competencies of key staff members. Typically, a positive site culture was one where staff behaved in a manner that promoted communication, collaboration and planning. This finding was taken as support for the argument that increasing the skill and competency base of safety critical role holders would lead to behaviours that would build and maintain a safety culture that would work to counter external industry demands and influences.

2.2 Market Force influence in the Australian Construction Industry

…it's hard to get things done right and do it a different way when you've got so much work to be done. I think being under pressure has a lot to do with safety, and I also think that the time required to do things is sometimes hard. (A quote from an engineer on a large civil project, as recorded during a focus group as collected by the Construction Site Safety Culture project June 2005)

As this quote indicates, doing the appropriate thing in regard to safety can be difficult in demanding periods. Analysis of the focus group and interview data revealed a range of primary factors that were seen as barriers to the development and maintenance of a positive site safety culture. The most common and ever present demands within the industry include: tight deadline pressures; financial issues due to high competition and low cost tendering; a highly transient subcontracting workforce and challenging work due to new and novel engineering requirements.

As well as these issues, a lack of consistency in safety management practices was highlighted in several focus groups. Currently, in Australia there is no industry wide and accepted framework for what constitutes OHS competency in leadership positions. This has resulted in each company managing its OHS obligations in their own manner. This differing approach to training and skilling has further exacerbated the challenging task of managing a workforce that moves and sub-contracts across many different companies.

Other more subtle pressures included societal changes and the concurrent impact of high wages often paid to the workforce. A theme discussed in a focus group was a belief that high wages have increased the risks that workers are prepared to take to get the job done. As the wages available in the construction are well above those available in other similar industries, it was argued that workers feel that they cannot lose their job because they cannot earn the same money elsewhere and they have a debt (credit card, house, car etc) that requires them to maintain their high wages. This theme is illustrated in the following quotes:

…I see that a lot, you know, there are young blokes up there - they are married, 23, they've got a kid on the way and they've got a $350,000 house, got a $40 or $50,000 car, he can't afford to be out of work, he can't afford to have his hours drop, so these guys, when the boss is saying something, they've got to make it work, they overcommit themselves and that's the sign of the day…..Instead of saying right I can only afford this car, this is what I am going to have, so I can still recover, I can turn around and I can say: mate shove it up your arse- it's not safe, and I know that I am still going to keep my $20,000 car and my …. $180,000

house. (A quote from a Site Safety Advisor on a large residential tower construction as recorded during a focus group as collected by the Construction Site Safety Culture project June 2005)

By providing an obstacle to safe performance, these external drivers have a clear and known impact on site health and safety. The difficulty that construction companies face is how to manage these external forces to maintain company profitability as well as uphold espoused health and safety values. The following section outlines how this could be achieved via better safety culture planning.

3.0 Research Method – Safety Critical Tasks

Essential to effective safety culture planning is the setting of a minimum bench mark for safety critical role competency. It was the intention of the researchers to utilise the high degree of formal and informal industry OHS expertise to create a model of the tasks that staff must be competent to complete.

To identify the skills and competencies that safety critical role holders should be competent to complete a survey was devised based on the focus group and interview data. This survey listed 40 safety tasks and asked people in key positions to rate: how frequently they undertook the task; how important the task was to the successful completion of their job; and how important they thought the task was to reducing injury on site. This survey was administered to all ACA companies and three 2nd tier contractors. A total of 358 survey responses were collected. See Table 2. for the demographics. The survey data was analysed to identify the tasks each safety critical position deemed to be important for their job and to reducing injury on site (Mean = 4.0+). It is acknowledge that this approach only reveals what is currently seen as important to site safety and does not directly contribute to an understanding of what tasks *should* be completed by these role holders. However, it is argued that the current approach to safety competency and skilling within the industry is fragmented to such an extent that politically, the only way to gain consistency within the industry is to gather industry wide perspectives as to what tasks are important. Future research will further develop this framework to allow for future planning within the positions.

4.0 Planning for a Positive Site Safety Culture

Planning for site safety culture has the purpose of reducing external obstacles to appropriate leadership behaviour and providing an environment that rewards positive behaviours, and more importantly, offers no excuse for not undertaking appropriate actions.

An integral part of safety culture planning is ensuring that people who hold safety critical positions have the appropriate level of knowledge and understanding to develop an environment that supports safety culture. The following points highlight the *minimum* tasks (organised under Interaction; *Knowledge of Rules & Legislation; and Knowledge & Process Competency*) that staff in safety critical roles must complete to have maximum impact of site safety.

Table 2. Position Grouping and number of Participants for Management Survey

Position	Number of Participants
CEO / MD & GMs	12
Senior Management (Inc CEO & GMs)	12
National OH&S Manager	8
State OH&S Manager	10
Regional OH&S Manager	12
Site OH&S Coordinator / Advisor	39
Engineer / Construction Professional	44
Construction Manager	35
Site Manager / superintendent	35
Project Manager	58
Foremen	13
Other (incl. Non-specified)	80
Total	**358**

4.1 Managing Directors, Chief Executive Officers & General Managers

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Recognise & reward people who have positively impacted safety
- Mentor staff and follow their progress

Knowledge of Rules & Legislation

- None specified

Knowledge & Process Competency

- Carry out formal inspections of workplace and work tasks

4.2 Senior Managers

Interaction

- Mentor staff and follow their progress
- Challenge unsafe behaviour/attitude at any level when you encounter it
- Speak to senior management about safety issues in the workplace

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Apply full working knowledge of your organisation's Safety Management System

Knowledge & Process Competency

- Develop project safety management plans
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools

4.3 Construction / Operations Manager

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Mentor staff and follow their progress
- Make site visits where you talk directly to a site worker about safety in the workplace
- Discipline staff for poor OHS behaviour/attitude
- Work with subordinates to solve safety problems
- Recognise & reward people who have positively impacted safety

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Provide general OHS information and provide basic OHS instruction.
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools

Knowledge & Process Competency

- Carry out formal inspections of workplace and work tasks
- Carry out Project Risk Assessments
- Evaluate OHS performance of subcontractors
- Monitor subcontractor activities
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)

4.4 Project Manager

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Consult on and resolve OHS issues
- Work with subordinates to solve safety problems
- Make site visits where you talk directly to a site worker about safety in the workplace
- Discipline staff for poor OHS behaviour/attitude
- Facilitate group/work team OHS discussions and meetings
- Provide general OHS information and provide basic OHS instruction.
- Plan and deliver Toolbox talks

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools

Knowledge & Process Competency

- Monitor subcontractor activities
- Carry out formal incident investigations
- Carry out Project Risk Assessments
- Apply full working knowledge of your organisation's Safety Management System
- Carry out formal inspections of workplace and work tasks
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Develop OHS procedures and instructions

4.5 Engineer

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Work with subordinates to solve safety problems
- Make site visits where you talk directly to a site worker about safety in the workplace
- Provide general OHS information and provide basic OHS instruction.

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Apply full working knowledge of your organisation's Safety Management System

Knowledge & Process Competency

- Monitor subcontractor activities
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Carry out formal inspections of workplace and work tasks
- Carry out Project Risk Assessments
- Carry out formal incident investigations

4.6 Site Supervisor / Manager

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Work with subordinates to solve safety problems
- Provide general OHS information and provide basic OHS instruction.
- Make site visits where you talk directly to a site worker about safety in the workplace
- Plan and deliver Toolbox talks
- Impart general OHS information and provide basic OHS instruction.
- Deliver site/workplace specific induction
- Discipline staff for poor OHS behaviour/attitude
- Consult on and resolve OHS issues
- Facilitate group/work team OHS discussions and meetings
- Participate in site safety committee

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Apply full working knowledge of your organisation's Safety Management System

Knowledge & Process Competency

- Monitor subcontractor activities
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Carry out formal inspections of workplace and work tasks
- Develop OHS procedures and instructions
- Carry out Project Risk Assessments
- Evaluate OHS performance of subcontractors
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools
- Carry out formal incident investigations

4.7 Foreman

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Speak to senior management about safety issues in the workplace
- Impart general OHS information and provide basic OHS instruction.
- Provide general OHS information and provide basic OHS instruction.
- Work with subordinates to solve safety problems
- Plan and deliver Toolbox talks

Knowledge of Rules & Legislation

- Apply full working knowledge of your organisation's Safety Management System
- Understand and apply general regulatory OHS requirements

Knowledge & Process Competency

- Monitor subcontractor activities
- Administer First Aid to injured persons
- Carry out formal inspections of workplace and work tasks

4.8 Site OHS Advisor / Supervisor

Interaction

- Make site visits where you talk directly to a site worker about safety in the workplace
- Challenge unsafe behaviour/attitude at any level when you encounter it
- Provide general OHS information and provide basic OHS instruction.
- Deliver site/workplace specific induction
- Consult on and resolve OHS issues
- Impart general OHS information and provide basic OHS instruction.
- Speak to senior management about safety issues in the workplace
- Facilitate group/work team OHS discussions and meetings
- Work with subordinates to solve safety problems
- Participate in site safety committee
- Recognise & reward people who have positively impacted safety
- Initiate & coordinate OHS awareness activities or presentations
- Plan and deliver Toolbox talks
- Discipline staff for poor OHS behaviour/attitude
- Deliver OHS training in the workplace

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Understand and apply detailed legislative requirements e.g. Welfare provisions as well as Safety & Health

Knowledge & Process Competency

- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Carry out formal inspections of workplace and work tasks
- Monitor subcontractor activities
- Carry out formal incident investigations
- Apply full working knowledge of your organisation's Safety Management System
- Develop OHS procedures and instructions
- Carry out Project Risk Assessments
- Develop project safety management plans
- Evaluate OHS performance of subcontractors
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools
- Research & prepare reports on OHS issues and improvement strategies
- Carry out basic task competency assessments of employees

4.9 Regional OHS Manager

Interaction

- Make site visits where you talk directly to a site worker about safety in the workplace
- Provide general OHS information and provide basic OHS instruction.
- Challenge unsafe behaviour/attitude at any level when you encounter it
- Impart general OHS information and provide basic OHS instruction.
- Work with subordinates to solve safety problems
- Speak to senior management about safety issues in the workplace
- Facilitate group/work team OHS discussions and meetings
- Recognise & reward people who have positively impacted safety
- Initiate & coordinate OHS awareness activities or presentations
- Deliver OHS training in the workplace
- Plan and deliver Toolbox talks

Knowledge of Rules & Legislation

- Understand and apply general regulatory OHS requirements
- Understand and apply detailed legislative requirements e.g. Welfare provisions as well as Safety & Health

Knowledge & Process Competency

- Carry out Project Risk Assessments
- Monitor subcontractor activities
- Develop OHS procedures and instructions
- Consult on and resolve OHS issues
- Apply full working knowledge of your organisation's Safety Management System
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Research & prepare reports on OHS issues and improvement strategies
- Carry out formal inspections of workplace and work tasks
- Carry out formal incident investigations

- Carry out basic project OHS system element audits
- Identify & include suitable OHS requirements into Subcontractor packages, eg. Risk assessment tools
- Develop project safety management plans
- Evaluate OHS performance of subcontractors

4.10 State OHS Manager

Interaction

- Challenge unsafe behaviour/attitude at any level when you encounter it
- Work with subordinates to solve safety problems
- Speak to senior management about safety issues in the workplace
- Make site visits where you talk directly to a site worker about safety in the workplace
- Consult on and resolve OHS issues
- Provide general OHS information and provide basic OHS instruction.
- Impart general OHS information and provide basic OHS instruction.
- Recognise & reward people who have positively impacted safety
- Deliver OHS training in the workplace
- Mentor staff and follow their progress
- Discipline staff for poor OHS behaviour/attitude

Knowledge of Rules & Legislation

- Apply full working knowledge of your organisation's Safety Management System
- Understand and apply general regulatory OHS requirements
- Understand and apply detailed legislative requirements e.g. Welfare provisions as well as Safety & Health

Knowledge & Process Competency

- Carry out Project Risk Assessments
- Develop OHS procedures and instructions
- Carry out formal incident investigations
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Carry out formal inspections of workplace and work tasks
- Develop project safety management plans
- Initiate & coordinate OHS awareness activities or presentations
- Monitor subcontractor activities
- Evaluate OHS performance of subcontractors

4.11 National OHS Manager

Interaction

- Speak to senior management about safety issues in the workplace
- Make site visits where you talk directly to a site worker about safety in the workplace
- Challenge unsafe behaviour/attitude at any level when you encounter it
- Work with subordinates to solve safety problems
- Consult on and resolve OHS issues
- Facilitate group/work team OHS discussions and meetings
- Impart general OHS information and provide basic OHS instruction.
- Provide general OHS information and provide basic OHS instruction.

Knowledge of Rules & Legislation

- None Specified

Knowledge & Process Competency

- Initiate & coordinate OHS awareness activities or presentations
- Carry out formal incident investigations
- Carry out formal inspections of workplace and work tasks
- Carry out workplace and task hazard identification, risk assessments & control (JSA & SWMSs)
- Carry out basic project OHS system element audits

5.0 Discussion

The characteristics and competencies mentioned above are merely the fundamental characteristics that the various position holders require to set a foundation for safety culture. Some knowledge, abilities and behaviours are required in all positions (eg. challenging unsafe behaviour / attitude at all levels when encountered); whereas, other competencies are specific to particular roles (eg. deliver site specific induction). It is vital that construction companies ensure that people in these positions have the ability to enact the espoused organisational safety values. By increasing safety competency, it should be possible to further minimise the impact of external market forces on site safety.

As previously mentioned, the key external factors to manage are: inflexible timelines, low cost tendering, novel work tasks, a transient workforce and a general willingness to take risks. Planning for safety culture competencies should allow for a greater understanding, within the project, of safety and the personal outcomes when it is not maintained. This greater understanding, particularly with positions of project manager and above, should work to reduce the presence of inflexible timelines in contracts and should encourage those with the power to seek extensions or variations to do so. Effective safety culture planning at this stage of the project is vital to ensure that inflexible timelines are not set and sufficient funds for safety are budgeted for. By doing so, the necessity to work excessive hours and take significant risks to get the job done would be reduced. Additionally, by encouraging the client to have a greater understanding of safety should also serve to create a more even playing field at the tendering process. It is not argued that this is an easy thing to achieve, however it is argued that a real reduction in injuries and fatalities cannot occur in an environment of under-costing and inflexible deadlines.

The planning for people in safety critical roles to have collaboration and communication skills should help to minimise the influence of novel work tasks on safety performance and risk perception. Increased worker input into decision making should provide a greater degree of expertise in managing novel safety issues and greater motivation to adhere to requirements.

Finally, a greater degree of consistency in safety skilling, combined with an environment that supports a safety culture, should begin to transfer values to the largely sub-contracting workforce. This understanding would be evidenced in a more negative evaluation of risk taking behaviour (ie. the outcomes of risky behaviour are apparent and seen to be significant).

6.0 Conclusion

Despite the existence of quality research articulating how safety culture should be built, managed and maintained, the powerful external market forces that are present in the construction industry work to interfere with the application of these findings and the

establishment of a true safety culture. It is argued that one small step towards reducing the impact of these factors is for the industry as a whole to plan for their safety critical roles to have the knowledge, skills and behaviours that will help them to make decisions that will reduce the power of these factors - whether those decisions are at the tendering / contracts stage or at the time of a concrete pour. Unfortunately, real improvements in safety and industry safety culture are not possible until a safety competency foundation is set.

7.0 References

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